

In each of the above particulars the specimens in question accord exactly with the diagnosis given by the eminent Norwegian naturalist. Specifically, however, *Pedicellaster palaeocrystallus*, nobis (for such it should accordingly be written), differs unequivocally from *P. typicus*, Sars (the only representative of the genus hitherto known), in the general size, proportions, and habitus of the starfish, as well as in the form of the pedicellariæ and spinelets. *P. palaeocrystallus* is of larger size; and the length of the arm-radius in proportion to that of the disk (about 5 : 1) is less than in *P. typicus*, in which it is $6\frac{1}{2}$ or 6 : 1; the contour of the arms is also different in our form, being more tumid on the inner third and much more attenuated on the remaining outward portion of the ray; the dorsal spinelets are decidedly radio-laminate and somewhat expanded at the tip, instead of being conical as described in *P. typicus*; and the shaft of the ambulacral spinelet is denticulate; whilst the pedicellariæ in the present species differ in being of even larger size and having the contour of the jaws considerably swollen out about the outer third and then tapering rapidly towards the extremity, which is somewhat truncate.

Other minor differences occur; and these, together with figures, will be recorded in the memoir on Arctic Echinodermata, in course of preparation by Prof. P. Martin Duncan and the writer.

The great rarity of the genus *Pedicellaster* and the interest attaching to its occurrence in such high latitudes may be urged in justification of the present advance-note upon the subject.

XX.—*On a Spine* (*Lophacanthus Taylora*, *mihi*, *nov. gen. et spec.*) *from the Coal-measures of Northumberland.* By THOMAS STOCK, of the Natural-History Department, Museum of Science and Art, Edinburgh*.

AMONGST a parcel of fish-remains sent me a few months ago by Mr. Joseph Taylor of Shire Moor, Northumberland, was a spine which Mr. Taylor said he believed was new. After a careful study of the specimen, and after consulting all the literature of the subject accessible to me, I came to the conclusion that the spine was not only specifically new, but must be regarded as the type of a new genus.

Description. The spine, as I received it, was in three fragments: the two upper were partially imbedded in the matrix;

* Read before the Edinburgh Geological Society, December 1879.

the lower was free. A small piece of about 7 millims. had been removed by Mr. Taylor, with the intention of preparing a microscopic section from it. The length of the spine as it exists is 18.4 centims.; in its perfect condition it was considerably longer. The base is broken short off at what must have been an appreciable distance above the point at which the spine entered the body of the fish, as no trace of the inserted portion remains. Its greatest diameter, which is at the base, is 9 millims. It curves gently backwards; the curvature is greater towards the point than towards the base. The apex itself is rather finely pointed and enamelled with ganoine. The ornament consists of numerous fine, longitudinal, slightly irregular striæ; it covers the whole of the existing surface with the exception of the tip. The grooves are narrower than the ridges, and smooth. Fracture shows that the pulp-cavity occupies the greater length of the spine. It is circular in shape, and, as is usually the case, is placed a little posterior to the median line. Its walls are thick. The anterior aspect is very convex throughout. On the posterior aspect is a prominent ridge, sloping to the left lateral margin at an average inclination of 35° . Between the summit of the ridge and the right lateral margin there is a groove, extending from the tip to the base. The middle third of the ridge is very gently undulated. In the groove are a few irregular pits; two of them may be seen about halfway between the point and the base, four near the apex. At first I supposed that these pits were the

Fig. 1.

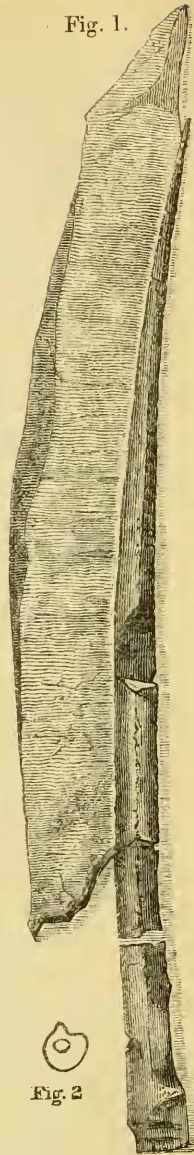


Fig. 2

Fig. 1. *Lophacanthus Taylori*, mihi; $\frac{3}{4}$ nat. size. In the Collection of Mr. Joseph Taylor.

Fig. 2. Ditto; $\frac{3}{4}$ nat. size, cross section.

scars of denticles that had become detached; but the most careful examination of the counterpart of two of the largest of them failed to reveal the slightest trace of tubercular or denticular structure.

Comments. The base of the spine is unfortunately wanting, so that it is impossible to say at what angle it was inserted in the body of the fish. From its great length and slenderness it may be conjectured that it was set at a very low angle, or that it was supported for the greater part of its length by a strong cartilaginous structure; it seems weak as a defensive weapon, compared with what was probably the large size of the fish.

Relations and Differences. In discussing its relations to genera previously described, it will be enough to notice at length two only, viz. *Leptacanthus* and *Orthacanthus*, both established by Agassiz. Agassiz's *Leptacanthus* was founded upon Jurassic specimens. *L. longissimus* from Caen was doubtfully put by him in the genus. He says "Je le signale plutôt à l'attention des paléontologistes que je n'espère en donner une description satisfaisante." He is doubtful as to the serration and as to the ornament. Until the spine is better known it would be unwise to say much about it. If Agassiz's account of it is correct, Mr. Taylor's specimen differs from it by important characters. *L. longissimus* is finely serrated on the posterior margin, compressed, and shows in cross section a concave posterior area. Two spines from Carboniferous rocks have been referred to *Leptacanthus* by McCoy (Brit. Pal. Fossils, p. 633); both, however, differ by important characters from Mr. Taylor's specimen.

Curved spines have been referred to *Orthacanthus* by J. S. Newberry (Pal. Ohio, vol. i. p. 332). He believes the straightening is due to pressure. *Orthacanthus* appears to be rare in the British Coal-measures, but is usually, when referred to, described as straight. Whether curved or straight, the generic distinctness of the specimen I am describing will not, I think, be affected. The structure of the posterior area, the absence(?) or, if it may be said to exist, the peculiar nature of the denticulation, and the general facies of the spine separate it from that genus. The same assemblage of characters separates it also from *Phricacanthus*, a spine described by Mr. J. W. Davis, F.G.S. (Q. J. G. S., May 1879).

I have no data by which to connect it with teeth or other remains of diagnostic value. The specimen appears to be unique. Until discovery throws light upon its true affinities it must remain as the type of a new genus, which I propose

to call *Lophacanthus**; and to it I add the specific name of *Taylori*, in honour of the discoverer.

Horizon and Locality. Shale above the Low Main Seam, Newsham, Northumberland.

XXI.—On the Nomenclature of Polyzoa, Busk.

To the Editors of the *Annals and Magazine of Natural History*.

GENTLEMEN,—My friend Mr. A. W. Waters, F.G.S., has lately referred (in your Number for January 1880) to my use of the word "Polyzoa" (in Dixon's 'Geology of Sussex,' new edition, pp. 200 and 311) for the *group* as determined by Mr. Busk, F.R.S., instead of for the *zooïd* as applied by Thompson. I am sorry that I did not write as accurately and clearly as might have been. Instead of "POLYZOA, Thompson," I should have written "POLYZOA, Busk;" and I ought not to have stated that "the *Polyzoa* were first defined by Dr. J. V. Thompson," &c., but that, *following up Thompson's researches, Mr. Busk completed the determination of the group*. In my own words, I repeat that "group-names are indications of advancing scientific knowledge, and not to use the best is to keep science back." Further, "the published name of a species is (or ought to be) not only the established appellation of a distinct form in nature, but also the registered evidence of the successful labour and acumen of its discoverer and describer," whilst the complete mastery of such natural groups as genera &c. comes with time.

On another point,—if your readers please to refer back to the *Ann. & Mag. Nat. Hist.* vol. vii. no. 44, June 1841, pp. 301 *et seq.*, they will find a transcript of Ehrenberg's finished classification from the *Trans. Berlin Acad.* for 1838, when his "Bryozoa" comprised four orders, the first of which consists of the "Polythalamia;" and all of these, except *Lunulites*, *Cupularia*, and *Flustrella*, are FORAMINIFERA. Consequently Mr. Waters has to take this matter into his further consideration. For my part I am quite willing to accept Mr. Busk's determination of the group (see *Ann. & Mag. Nat. Hist.* ser. 2, vol. x. p. 352, 1852; *Cat. Polyzoa Brit. Mus.*; and *Monogr. Pal. Soc.*, *Polyzoa of the Crag*, &c.) as the latest and the best; and I shall not trouble you with any further correspondence on the subject.

Your obedient Servant,

T. RUPERT JONES.

Camberley, Surrey,
Feb. 10, 1880.

* λόφος = a ridge.